

Claims

- [c1] 1. A method of hydroforming hollow work-pieces by providing a pair of upper and lower tool inserts (B) having open axial ends and defining an elongated cavity (E) there between when said tool inserts are forced together, said upper and/or lower tool inserts being composed of at least two segments that are in a locked position in all directions (X, Y, Z) during the forming of the work-piece and in contact with a base plate (A) on the side opposite to the cavity and
- a) providing a hollow work-piece in said cavity;
 - b) sealing the ends of the hollow work-piece;
 - c) filling said work-piece with liquid;
 - d) applying an internal pressure to the inside of the work-piece by increasing the pressure on said liquid;
- and
- e) moving said upper and lower tool inserts together to deform portions of the work-piece at any time after step a),
- wherein movement of said segments in the X- and the Y-direction is prevented by other means than by using vertical supports acting on the outer surfaces of the inserts.

- [c2] 2. Method according to claim 1, wherein the movement of the segments are prevented by retaining elements extending from said base plate into cavities (D) formed in said segments, said cavities being adapted to receive said retaining elements.
- [c3] 3. Method according to claim 1, wherein the movement of the segments are prevented by retaining elements extending from said segments into cavities formed in said base plate, said cavities being adapted to receive said retaining elements.
- [c4] 4. Method according to claim 1, wherein the segments are guided onto the upper and the lower base blocks plates by guide columns (C).
- [c5] 5. Method according to claim 3, wherein the retaining elements act as said guide columns.
- [c6] 6. Method according to claim 1, wherein the segments are kept in a fixed position mainly by friction forces acting between the base plate and the insert.
- [c7] 7. A tool for hydroforming a hollow work-piece comprising a pair of upper and lower tool inserts (B) having open axial ends and defining an elongated cavity (E) there between when said tool inserts are forced together, said

upper and/or lower tool inserts each being composed of segments that are in a locked position in all directions (X, Y, Z) and in contact with an upper and a lower base plate (A) wherein said tool is free from vertical supports acting on the outer surfaces of the insert to prevent movement thereof in the X- and the Y-direction.

[c8] 8. A tool for hydroforming a hollow work-piece, comprising a pair of upper and lower tool inserts (B) having open axial ends and defining an elongated cavity (E) there between when said tool inserts are forced together, said upper and/or lower tool inserts each being composed of segments that are in a locked position in all directions (X, Y, Z) and in contact with an upper and a lower base plate (A), wherein retaining elements preventing movement of the segments extend from said base plates into cavities (D) formed in said segments, said cavities being adapted to receive said retaining elements.

[c9] 9. A tool for hydroforming a hollow work-piece according to claim 7, wherein a plurality of retaining elements for preventing movement of the segments extend from said segments into cavities formed in said base plates, said cavities being adapted to receive said retaining elements.

[c10] 10. A tool for hydroforming a hollow work-piece accord-

ing to claim 7, wherein the segments are guided onto the upper and the lower base plates by guide columns (C) extending from said base plates.

[c11] 11. A tool for hydroforming a hollow work-piece according to claim 7, wherein the upper and the lower base plates are guided onto the segments by guide columns (C) extending from said segments.

[c12] 12. A tool for hydroforming a hollow work-piece according to claim 8, wherein the retaining elements also act as said guide columns.

[c13] 13. A tool for hydroforming a hollow work-piece according to claim 8, wherein the retaining elements are in the shape of pins.